IN THE CLAIMS:

Please add new claims 26 to 45 as follows:

1. (original) A high-throughput screening method, comprising the steps of:

(A) sequentially loading a plurality of discrete combinations of reactants into a longitudinal reaction zone;

(B) reacting each of said plurality of combinations as each combinations passes through said reaction zone to provide a continuously or an incrementally varying reaction product; and

(C) sequentially discharging the reaction product of each of said combinations from said reaction zone as reaction of each of said combinations is completed.

2. (original) The method of claim 1, wherein the discrete combinations of reactants vary in identity or amount.

3. (original) The method of claim 1, wherein step (B) comprises subjecting each sequentially loaded combination to a varying reaction parameter within said zone.

4. (original) The method of claim 1, wherein each combination of reactants is loaded in a vial prior to step (A).

5. (original) The method of claim 1, wherein said combinations of reactants are suspended in a vapor stream.

6. (original) The method of claim 2, further comprising the steps of:

(D) detecting said varying products and

(E) correlating said products with said varying reactants to provide a nonrandom combinatorial library of product.

7. (original) The method of claim 3, further comprising the steps of:

(D) detecting said varying products and

(E) correlating said products with said varying reaction parameters to provide a nonrandom combinatorial library of product.

8. (original) The method of claim 1, further comprising sequentially loading said combinations into an air lock, sealing said air lock and pressurizing said air lock to a pressure substantially equal to a pressure in said reaction zone prior to loading said combinations according to step (A).

9. (original) The method of claim 1, further comprising sealing an air lock prior to discharge of said reaction product according to said step (C); discharging said reaction product from said reaction zone to said air lock; sealing said air lock from said reaction zone; releasing pressure in said air lock; and discharging said reaction product from said air lock.

10. (original) The method of claim 1, wherein said combinations of reactants are at least partially embodied in a liquid, said liquid being contacted within said longitudinal reaction zone with a second reactant at least partially embodied in a gas, the second reactant having a mass transfer rate into the liquid sufficient to allow a reaction rate that is essentially independent of said mass transfer rate.

11. (original) The method of claim 10, wherein said each combination of reactants includes a catalyst system comprising a Group VIII B metal.

12. (original) The method of claim 11, wherein the Group VIII B metal is palladium.

13. (original) The method of claim 11, wherein the catalyst system further comprises a halide composition.

14. (original) The method of claim 11, wherein the catalyst system further comprises an inorganic co-catalyst.

15. (original) The method of claim 14, wherein the catalyst system further comprises a combination of inorganic co-catalysts.

16. (canceled)

17. (canceled)

18. (canceled)

19. (canceled)

20. (canceled)

21. (canceled)

22. (canceled)

23. (canceled)

24. (canceled)

25. (canceled)

26. (new) A high throughput screening method, comprising:

(A) selecting a set of reactants;

(B) (i) sequentially reacting each member of said set under a selected set of catalyst or reaction conditions according to a reaction parameter to provide continuously or incrementally varying product, and (iii) evaluating a set of products from said reacting step; and

(C) reiterating (B) wherein a successive set of catalyst or reaction conditions selected for

a step (i) is chosen as a result of an evaluating step (iii) of a preceding iteration of step (B).

27. (new) The method of claim 26, wherein said each member is reacted in a catalyst system comprising a Group VIII B metal.

28. (new) The method of claim 26, wherein said each member is reacted in a catalyst system comprising palladium.

29. (new) The method of claim 26, wherein said each member is reacted in a catalyst system comprising a halide composition.

30. (new) The method of claim 26, wherein said each member is reacted in a catalyst system that includes an inorganic co-catalyst.

31. (new) The method of claim 26, wherein said each member is reacted in a catalyst system that includes a combination of inorganic co-catalysts.

32. (new) The method of claim 26, comprising reiterating (B) until said products are evaluated as satisfactory against a preset standard.

33. (new) The method of claim 26, comprising reiterating (B) until said products are evaluated as satisfactory by a general linear model analysis routine.

34. (new) The method of claim 26, comprising reiterating (B) to complete a full factorial design experiment on said set of catalyst or reaction conditions and said set of reactants.

35. (new) The method of claim 26, comprising reiterating (B) until said evaluating (iii) comprises a complete observation of each of all possible combinations of catalyst or reaction condition.

36. (new) A method of screening multiple chemical reactions according to reaction variables, comprising steps of:

(A) sequentially loading combinations of reactants into a longitudinal reaction zone through a charge valve;

(B) subjecting each sequentially loaded combination to a parameter of reaction within said zone to provide continuously or incrementally varying product; and

(D) sequentially discharging a reaction product of each of said combination from said reaction zone as reaction of each of said combination is completed.

37. (new) The method of claim 36, wherein step (A) comprises comprising sequentially loading varying combinations of said reactants into said longitudinal reaction zone.

38. (new) The method of claim 36, wherein step (B) comprises subjecting each sequentially loaded combination to a varying parameter of reaction within said zone.

39. (new) The method of claim 36, wherein step (B) comprises subjecting each sequentially loaded combination to a varying parameter of reaction within said zone to provide continuously and incrementally varying product.

40. (new) The method of claim 36, wherein each said combination of reactants is sequentially loaded in a vial.

41. (new) The method of claim 36, wherein said varying combinations of reactants are suspended in a vapor stream.

42. (new) The method of claim 36; further comprising:

(E) controlling a composition of each sequentially loaded combination and controlling said varying parameter of reaction within said zone;

(F) detecting said varying product; and

(G) correlating said detected product with said varying parameters of said reaction to provide a nonrandom combinatorial library of product.

43. (new) The method of claim 36, further comprising sequentially loading said combinations into an air lock, sealing said air lock and pressurizing said air lock to a pressure substantially equal to a pressure in said reaction zone prior to loading said combinations according to step (A).

44. (new) The method of claim 36, comprising sealing an air lock prior to discharge of said reaction product according to said step (D), discharging said reaction product from said reaction zone to said air lock; sealing said air lock from said reaction zone, releasing pressure in said air lock and discharging said reaction product from said air lock.

45. (new) The method of claim 36, comprising providing said combinations of reactants at least partially embodied in a liquid and contacting said liquid within said longitudinal reaction zone with a second reactant system at least partially embodied in a gas, the second reactant system having a mass transport rate into the liquid wherein the liquid forms a film having a thickness sufficient to allow a reaction rate that is essentially independent of the mass transport rate of the second reactant system into the liquid to synthesize said reaction product.